Developmental Biology

An International Journal
Published under the Auspices of the
Society for Developmental Biology

EDITOR-IN-CHIEF: Igor B. Dawid

ASSOCIATE EDITORS

Peter J. Bryant
David Epel
Gerald D. Fischbach
Norton Bernard Gilula
Elizabeth D. Hay
L. Dennis Smith

James Weston

EDITORIAL ASSISTANT: Barbara Murray

ADVISORY EDITOR
Elizabeth D. Hay

VOLUME 53, 1976

ACADEMIC PRESS
New York and London

Copyright © 1976 by Academic Press, Inc.

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form, or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

Contents of Volume 53

Number 1, October 1, 1976

bituary for Mac V. Edds, Jr. iv

ull Papers

Rosalind J. Zalin. The Effect of Inhibitors upon Intracellular Cyclic AMP Levels and Chick Myoblast Differentiation 1

E. Gayle Schneider and W. J. Lennarz. Glycosyl Transferases of Eggs and Embryos of *Arbacia punctulata* 10

Miriam Rich Anderson and Carol S. Deppe. Control of Fungal Development. I. The Effects of Two Regulatory Genes on Growth in *Schizophyllum commune* 21

Jon R. Polansky and Bryan P. Toole. Hyaluronidase Activity during Thyroxine Induced Tadpole Metamorphosis 30

David S. Packard, Jr. and Antone G. Jacobson. The Influence of Axial Structures on Chick Somite Formation 36

Richard D. Hindes and Merle Mizell. The Origin of Immunoglobulins in Opossum "Embryos" 49

David Francis. Changes in Protein Synthesis during Alternate Pathways of Differentiation in the Cellular Slime Mold *Polysphondylium pallidum* 62

Mark B. Dworkin and Anthony A. Infante. Relationship between the mRNA of Polysomes and Free Ribonucleoprotein Particles in the Early Sea Urchin Embryo 73

Shun-ichi Miyazaki and Susumu Hagiwara. Electrical Properties of the *Drosophila* Egg Membrane 91

R. S. Hakim. Cellular Metamorphosis. III. Timing of Adult Determination within the Larval Development of the Labial Gland Duct in the Tobacco Hornworm 101

Glenn L. Decker, David B. Joseph, and W. J. Lennarz. A Study of Factors Involved in Induction of the Acrosomal Reaction in Sperm of the Sea Urchin, *Arbacia punctulata* 115

rief Notes

Stephen Goldberg. Progressive Fixation of Morphological Polarity in the Developing Retina 126

Donald R. Senger and Paul R. Gross. Endogenous Protein Synthesis of the Cell-Free Wheat Germ System 128

Robert P. Erickson. Glucose-6-Phosphate Dehydrogenase Activity Changes during Spermatogenesis: Possible Relevance to X-Chromosome Inactivation .. 134

Mario E. Manes and Francisco D. Barbieri. Symmetrization in the Amphibian Egg by Disrupted Sperm Cells 138

James R. Flanagan. A Computer Program Automating Construction of Fate Maps of *Drosophila* 142

Kristine H. Atkinson and Burr G. Atkinson. Morphogenetic Determination of the Dermoepidermal Interface during Tail Regeneration in *Rana catesbeiana* 147

Number 2, October 15, 1976

ull Papers

Klaus von der Mark, Helga von der Mark, and Steffen Gay. Study of Differential Collagen Synthesis during Development of the Chick Embryo by Im-

munofluorescence. II. Localization of Type I and Type II Collagen during Long Bone Development 153

WILLIAM F. LOOMIS, SALLY WHITE, AND RANDALL L. DIMOND. A Sequence of Dependent Stages in the Development of *Dictyostelium discoideum* 171

YOSHIKO K. TAKEUCHI AND TAKAO KAJISHIMA. Inhibitory Effects of Dibutyryl Cyclic AMP and Theophylline on the Melanosome Transformation in the Embryonic Chick Pigmented Retina Cultured *in Vitro* 178

MICHAEL C. O'NEILL. Population Modeling in Muscle Cell Culture: Comparisons with Experiments 190

NEVILLE D. YEOMANS AND JERRY S. TRIER. Epithelial Cell Proliferation and Migration in the Developing Rat Gastric Mucosa 206

DONALD F. READY, THOMAS E. HANSON, AND SEYMOUR BENZER. Development of the *Drosophila* Retina, a Neurocrystalline Lattice 217

LEON W. BROWDER AND JOHN H. WILLIAMSON. The Effects of *cinnamon* on Xanthine Dehydrogenase, Aldehyde Oxidase, and Pyridoxal Oxidase Activity during Development in *Drosophila melanogaster* 241

E. HOUSSAINT, M. BELO, AND N. M. LE DOUARIN. Investigations on Cell Lineage and Tissue Interactions in the Developing Bursa of Fabricius through Interspecific Chimeras 250

ROBERT A. KOSHER. Inhibition of "Spontaneous," Notochord-Induced, and Collagen-Induced *in Vitro* Somite Chondrogenesis by Cyclic AMP Derivatives and Theophylline 265

H. BENJAMIN PENG AND LIONEL F. JAFFE. Polarization of Fucoid Eggs by Steady Electrical Fields 277

Brief Notes

HORST BOHN. Regeneration of Proximal Tissues from a More Distal Amputation Level in the Insect Leg (*Blaberus craniifer, Blattaria*) 285

ROBERT J. WORDINGER AND RALPH L. BRINSTER. Influence of Reduced Glucose Levels on the *in Vitro* Hatching, Attachment, and Trophoblast Outgrowth of the Mouse Blastocyst 294

HIROYUKI IDE AND TADAO HAMA. Transformation of Amphibian Iridophores into Melanophores in Clonal Culture 297

HERMAN GORDON. Corneal Geometry: An Alternative Explanation of the Effect of 6-Diazo-5-oxo-L-norleucine on the Development of Chick Cornea 303

Author Index for Volume 53 306

The Subject Index for Volume 53 will appear as part of a cumulative index for the year 1976.

Information for Authors

Developmental Biology will publish in English original papers and review articles bear-
g on problems of development in the broadest sense; it will contain papers dealing with
mbryonic and postembryonic development, growth, regeneration, and tissue repair both
plants and animals. Papers dealing with reproductive biology and biology of aging that
veal fundamental mechanisms of general interest will also be published. The journal
rves as a meeting ground for studies on development that employ techniques from a
ide range of disciplines, e.g., biochemistry, biophysics, cytology, experimental morpho-
nesis, teratology, genetics, immunology, microbiology, pathology, pharmacology and
ysiology. The journal aims for rapid publication; currently, publication time is 4–5
onths from date of acceptance.

Articles usually do not exceed 15,000 words and must be accompanied by an abstract
at gives, in 200 words or less, a synopsis of the work, including methods and results.
rief notes are 2500 words or less including the bibliography, which should contain only
2 references unless the abbreviated reference format is used (see directions under refer-
nces). The conventional format is: abstract, introduction, methods and materials, re-
lts, and discussion, but authors are encouraged to present their material in the most
gical and appropriate form.

Figures should be numbered consecutively in the order of their appearance and each
ould have a descriptive legend. Mark all figures with the author's name and address.

Line drawings should be made with India ink on smooth white paper. Do not submit
iginal line drawings larger in size than 13 × 10″; instead enclose smaller high quality
rints for the printer and for editorial use (two copies). Be sure lettering is uniform and
rge enough to allow for reduction and that the drawings when reduced will be either
olumn (2⅝″) or page (5½″) width. A figure that is submitted 5¼″ wide with lettering
mm high when reduced 50% will be a single column width. A figure submitted 11″ wide
ith lettering 3 mm high when reduced 50% will be full page width.

Photographs submitted for publication must be the actual size for reproduction and
refully labeled with letters 2–4 mm high. The page size of the journal must be consid-
ed and the following format observed.

(1) Column width figures are to be no wider than 2⅝″ or longer than 8″.

(2) Page size figures should be 5½″ wide and no longer than 8″.

(3) If the author decides to bleed the page (no margins), figure numbers should be no
loser than ¾″ to the margin to allow for trimming during binding of the journal. Figures
o be bled must be 6⅞ × 10″ (submitted at 7 × 10¼″ to allow trimming).

Use unmounted figures where possible, but when several appear together as one plate,
ount them on cardboard or paper as close together as possible. The engraver will tool
in white lines between figures. Give magnification in the legend or indicate with a μ
arker on the photograph. Two pages of half-tone figures per article and ten pages of
alf-tone figures per review article will be published without cost to the author; a charge
f $50 per page will be required for pages in excess of this number. The author will defray
ne expense of colored plates.

Tables should be used to condense data referred to in the text. They should be typed
n separate pages, numbered consecutively with Arabic numerals in order of mention
n the text, and collected at the end of the manuscript. Give each table a concise, de-
criptive heading. Tables should be so composed that the content can be grasped with-
ut reference to the text.

References to the literature may be cited in one of the following forms: Doe (1965) has observed that . . . ; (Doe, 1955; Doe *et al.*, 1960); Doe 1961, p. 250). Use suffixes a, b, etc. following the date to distinguish two or more works by the same author(s) in the same year (Doe, 1960a, b). Alternatively, references may be referred to by number: Doe (1) has observed that . . . (see also 5, 10, 16). Arrange literature citations in the bibliography alphabetically according to the surname of the author, using the following order of items: author(s), date of publication, title of article or book, journal name, volume number, inclusive pages, publisher and city (for books only). Abbreviate titles of journals in accord with Chemical Abstracts' Service Source Index. Number the references only if they are referred to by number in the text. For a brief note with more than twelve references, references in the text must be cited by number and titles omitted in the bibliography section. The same short form may be used with a full paper when an excessive number of references are quoted.

Galley proof should be read carefully as no page proof will be sent to authors. Be certain figures are the correct size and correctly reproduced either as halftones or line drawings and avoid excessive text changes that involve resetting. Reprints may be ordered when galley proof is returned. Fifty reprints are supplied gratis.

Manuscripts should be concise and consistent in style, spelling, and use of abbreviations. They must be typewritten, double-spaced, on one side of white bond paper about $8\frac{1}{2} \times 11''$ in size, with the pages numbered consecutively. Indicate the address for galley proof. Include with full length articles a running headline not exceeding 35 letters and spaces. Use footnotes sparingly, if at all. Cite them, using superscript numbers, in consecutive order in the text and type them consecutively on a separate sheet. Acknowledgments and figure legends should also be typed, double-spaced, as separate sections. Two copies of the manuscript (original and carbon) and two copies of the figures should be mailed to the new editor-in-chief Dr. Igor Dawid, Department of Embryology, Carnegie Institution of Washington, 115 West University Parkway, Baltimore, Maryland 21210.

Features will include announcements of meetings and courses in the field of developmental biology, and some meeting reports. Persons interested in preparing meeting reports are encouraged to contact the Editor.